PROGRESS

OF

MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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Chronic Stiffness of the Vertebral Column.—DANA (*Medical News*, November 25, 1899, p. 673) discusses the subject of chronic spondylitis, and reports three personal observations. Ankylosis of the spine, with or without involvement of other points, or with involvement of only the hip and shoulder, is comparatively rare, except as a result of trauma or Pott's disease. It is observed, however, in association with chronic or gonorrhœal rheumatism, in arthritis deformans, spondylitis deformans, or as an occupation kyphosis of certain laboring classes.

Chronic spondylitis has generally been classed with arthritis deformans. In recent years two types of cases of chronic stiffness of the vertebral column have been reported which were believed to possess characteristics differing essentially from those of arthritis deformans with spinal involvement.

Instances of the first type were first published by von Bechterew in 1892, when he reported five cases of "stiffness of the vertebral column with kyphosis as a special disease type." He himself and others have since recorded similar cases. Here the trouble begins in the spine primarily, and is accompanied with a progressive stiffness and arching of the back which may become very marked. The patient suffers a great deal from intercostal pains, and the hip-joints and shoulder-joints are not very much, if at all, involved. According to Marie, there is an hereditary history and frequently a history of trauma, and he calls it the "hereditary traumatic type."

Dana reports two cases which belong to this type. The first case was a man, aged forty-four years, whose present trouble began about three years before he was first seen, which was in June, 1896. He first noticed a gradual stiffness developing in the upper part of his spine, and at the same time the shoulders became stooping and the back more and more arched. This was associated with some pain and a sense of discomfort in the back, and a feeling at times of constriction around the chest. There was never sufficient pain nor any acute illness to cause him to go to bed. The process gradually advanced until the whole vertebral column was perfectly rigid and very much arched, so that he walked with his body inclined at a marked angle. The head also became somewhat immobile, so that he could not move it upward or forward to any great extent, and the lateral movements also became lessened. There was but very little trouble with the hip-joints, and he could walk fairly well. The arms were strong, but the movements of the shoulders became rather limited.

The second case was a man, aged fifty-two years. He gave no history of injury nor of any hereditary taint. His present trouble began about one year before he was first seen, when he began to complain of pain and stiffness in the back. These pains were continuous and squeezing in character, and they ran sometimes down into the arms, especially into the left, but never involved the legs nor the viscera. These pains and the stiffness in the back continued gradually without much intermission. The patient consulted specialists in Europe, where locomotor ataxia was diagnosed. He was treated at Nauheim without relief. He returned to the United States, and was seen by Dana in 1891. At that time the spine was rigid in the cervical and dorsal regions, there being some movement in the lumbar region. The shoulder-joints were somewhat stiff. The spine was very slightly arched forward. There was no stiffness or ankylosis of the joints of the lower extremities, and no rheumatic deformities of any of the joints. The patient complained of an almost continuous feeling of constriction, sometimes amounting to pain, in the region of the fourth and fifth dorsal vertebræ, where there was little tenderness on percussion, but absolutely no kyphosis.

These two cases are believed by Dana to belong to the type of cases described by von Bechterew.

The second type of cases was first referred to by Strümpell, and later described in detail by Marie, who designated the affection by the name of "spondylitis rhizomelia," the term indicating an involvement of the spine-joints and root-joints. The condition as described by Marie is one characterized by a progressive ankylosis involving usually first the hip-joints, then the vertebral column, and the shoulder-joints. Sometimes both of the knees are affected, but never any of the smaller joints. There is no association with rheumatism or gout. The process is a chronic one, and accompanied with a little pain. Some exostoses are observable upon the sacral bones and the bodies of the central vertebræ, and also a flattening of the thorax and pelvis, with loss of thoracic respiration and muscular atrophy in the dorsal and gluteal regions. The smaller joints are unaffected. The disease attacks men only, and occurs at middle life and somewhat later.

Dana gives the notes of an interesting case which he believes belongs to this class.

In the matter of diagnosis one has to differentiate between spondylitis rhizomelia and arthritis deformans involving the vertebral column. According to Dana, the essential points which are claimed to differentiate spondylitis are: 1. The fact that it produces directly an ankylosis, without any previous inflammatory swelling, with exudation and proliferation; also, that it produces this ankylosis directly, and not as a result of a deformity with secondary ankylosis, as in the case of arthritis deformans. 2. That it begins in the vertebral joints and extends thence to the hips and other large joints. 3. That the smaller joints are never or only rarely affected. 4. The internal organs and nervous system remain normal. 5. The clinical picture is one of great uniformity. 6. There is no previous history of rheumatism or gout, and no evidence of arthritis deformans in other parts of the body. 7. The disease occurs usually in men in about middle life.

Dana states that so far as personal observations go it does not appear to him that a special new malady has been made out. He is inclined to believe that, after all, spondylitis rhizomelia is a form of arthritis deformans.

Acute Diabetes Mellitus Supervening in a Case of Diabetes Insipidus; Coma; Death.—BLACKETT observed an interesting case in which diabetes insipidus was followed by diabetes mellitus, the patient dying eventually of diabetic coma. The etiology of the disease was attributed to mental shock and worry.

The patient was a man, aged fifty-four years. There was no family history of diabetes. In 1897 he was overworked in arranging a bazaar. He received a severe shock in May, 1898, a friend with whom he was in conversation suddenly dropping dead at his feet. In September, 1898, he was present at a fire between 2 A.M. and 5 A.M., and worked hard in an endeavor to save life and property. Almost immediately afterward he began to suffer from great thirst, dryness of the mouth, debility, and polyuria. The thirst persisted until February, 1899. The amount of urine varied between seven and eight pints to over ten pints. The specific gravity was always low, ranging between 1006 and 1010 at this time. The urine was repeatedly examined for sugar and albumin and always found negative. During January, 1899, the specific gravity of the urine ranged as low as 1002. Early in February the thirst and dryness of the mouth diminished, and the amount of urine was much less. Throughout March his general health was much improved. On April 22d he had several attacks of vomiting. The following day his general condition was much worse. The intense dryness of the mouth returned. The pulse was 120 per minute and very weak; the temperature was subnormal. During the night of April 23d he became partially comatose. On the 24th he remained quite drowsy, and marked changes in the urine were first noted. Instead of having a low specific gravity, as heretofore, it was found to have a specific gravity of 1026, and contained an abundance of sugar, but no albumin. The comatose condition deepened during April 25th, and the patient died at 10.45 P.M., the coma having lasted for about thirty-six hours.

Various lines of treatment were tried throughout the course of the disease without avail. Blackett thought that the repeated shocks to the nervous system played an important part in the etiology of the diabetes in this case. —*Lancet*, November 25, 1899, p. 1434.

Malignant Endocarditis.—As the result of the study of ten cases, EBSTEIN (*Deutsches Archiv für klin. Med.*, Band lxiii., p. 217) draws the following conclusions: Malignant endocarditis may follow either an acute, subacute or chronic course. There is no certain and constant symptomatological picture in the various cases. Other things being equal, the earlier the cerebral symptoms appear the more rapidly fatal is the disease. Not the cardiac symptoms, but the general symptoms indicate the malignancy of the process. Among the important symptoms fever stands first, characterized not only by abnormally high temperature, but also by great variations, including sometimes typhus inversus. If endocardial changes cannot be demonstrated, and if there are no discoverable local alterations to explain the fever, it is necessary to be satisfied with the diagnosis of cryptogenetic septicopyæmia. If there are, however, foci to which the fever may be attributed the difficulty of making a proper diagnosis is sometimes insuperable. Chills, even if repeated daily and regularly, do not warrant the diagnosis of metastatic abscess in malignant endocarditis. There are, therefore, no positive signs of the pyæmic form of the disease, and the latter can be recognized only when metastatic suppuration can be demonstrated in other ways. The diagnosis of the typhoid form of malignant endocarditis is only proper when other possible causes of a typhoid state are not present.

Internal Secretions and the Regulation of the Circulation.—KAHANE (*Centralblatt für allg. Path. u. path. Anatomie*, Band x., No. 23) has an interesting article on this subject. He begins with a number of axioms, such as: All glands which are independent organs have an internal secretion; the principal function of this secretion is the regulation of the distribution of blood; there are relationships between the various blood-glandular organs and between the latter and certain vascular areas; growth and development, nutrition, and metabolism depend on a proper distribution of blood; diseases of the blood-glandular organs lead to disturbances of growth, development, metabolism and nutrition, varying according to the stage of development of the different organs. The discussion of the probable internal secretions of various glands does not bring out anything especially new. The author insists that the functional affections of the internal secretions are more important to bear in mind than anatomical diseases of the various organs. So, for example, tuberculosis of the adrenals is important in the pathogenesis of Addison's disease only in so far as it affects the internal secretion of the glands. It is only according to this view that we can understand how in one case, notwithstanding anatomical disease, there is no Addison's disease; in another case, although there is Addison's disease, there is still no anatomical change in the adrenals. Similar statements could be made of the hypophysis and acromegaly. The well-known pathological relation between the parotid glands and the testes the author claims to indicate a relation in internal secretions. He also thinks that similar relations exist between the liver and the kidneys and the kidneys and the heart. In regard to the regulation of the circulation, Kahane points out that a number of glandular extracts exert an intense effect on the blood-pressure and the contraction of the bloodvessels. This is most obvious of the adrenal extract, which, when applied subcutaneously or in intravenous injections, causes a temporary but enormous increase of the blood-pressure, or applied on mucous membranes causes an almost complete local anæmia. Thyroid extract, on the other hand, causes a fall of blood-pressure without change of the heart's action, so that one must suppose that a dilatation of the arteries occurs. Hypophysis extract increases the blood-pressure with simultaneous increase of the heart's action, but without change in the frequency of the pulse, so that a contraction of the arterioles is probable. Regarding the other extracts, there are statements going to show that they all cause alterations of the blood-pressure. Studies of the diseases of the ductless glands point to the same fact. According to the author's theory, all the vascular alterations commonly attributed to the influence of vasomotor nerves are due to the internal secretions of the various glands. He admits that the fibres of the sympathetic and vagus are in fact concerned in the distribution of the blood, but insists that the irritation for these nerves is furnished by the internal secretions. This makes it clear to him why the blood-vascular organs are so richly innervated. The regulation of the blood-supply to the different parts of the body, according to him, is due to the interaction of the blood-vascular organs, and he makes an attempt at a scheme showing the relation of the various internal secretions to certain circulatory areas, thus the thyroid and the brain, skin and bones, the adrenals and the muscles, the pancreas and the portal circulation, the thymus and the aorta, the kidneys and the aorta, etc. The terms "hæmotrophy" and "dyshæmotrophy" are introduced in order to indicate whether the distribution of blood corresponds to the needs of the single organs and the whole organism, or otherwise, and, as the author says, when the principle of hæmotrophy is understood such crude ideas as the antithesis between anæmia and hyperæmia must be abandoned. The further details of the author's sketch are not necessary to reproduce here. The extracts given should suffice to call attention to the article and show its interest in the study of many problems in pathology.

Latent Fever in Chronic Tuberculosis.—MIRCOLI (*Deutsches Archiv für klinische Medecin*, Band lxiii., p. 162) gives a thoughtful and suggestive article on this subject. Formerly fever was considered an essential symptom in tuberculosis, notwithstanding the fact that a tuberculous infection might be seen to exist in organs such as the liver, joints, or peritoneum for years without rise of temperature. Maragliano emphasized the importance of fever in the late stage of tuberculosis and its relation to secondary infections by the common pyogenic bacteria, and Mircoli, in 1896, observed cases of undoubted pulmonary tuberculosis without fever. He noticed that, especially in many cases of so-called predisposition, tuberculosis was actually present without fever. He, therefore, studied the question experimentally. He early found, as Babes had previously done, that the injection of dead tubercle bacilli was more likely to produce a rise of temperature than the injection of living bacilli. This could be explained by the fact that the dead bacilli are more easily penetrated by the fluids of the body and their proteins absorbed. The pyogenic properties of tubercle bacilli are also exhibited by the old and new tuberculins of Koch, as well as other preparations of the specific organism. On the other hand, Maragliano discovered a group of substances which have an opposite effect on the temperature, and these observations were confirmed by de Schweinitz and Dorset. These substances, which are toxins, are continually formed anew, and enter the circulation, and therefore affect the organism in a uniform manner. On the other hand, for the activity of the proteins it is necessary that the bacilli be dead and the organism dissolve them. Their biological action is, therefore, limited, and depends on accidents. The fact that lower temperatures may occur in infectious diseases has been overlooked on account of the conventional belief that the single characteristic of fever is an elevation of temperature, although it has long been known that certain infectious diseases, such as typhoid, recurrent fever, staphylococcus and streptococcus septicæmia, etc., sometimes have no elevation of temperature, either at times or during their whole course, or may even have an abnormally low temperature. Moreover, while we know that certain other organic substances, such as milk, peptone, etc., cause an elevation of temperature, others, like urine, bile, and snake-poison, reduce the temperature. Mircoli studied the temperature of tuberculosis in animals. In one hundred and twenty guinea-pigs inoculated with various quantities of bacilli the more important results were as follows: When the infection is intense, as by two and one-half milligrammes, the elevation of temperature begins in the second week. It sometimes increases, sometimes decreases, but persists almost constantly until death between the twentieth and thirtieth day. With a smaller quantity, say one milligramme, there is at first an elevation of temperature, but the course soon becomes apyretic and then just before death, between the second and third months, rises again. With a still lighter infection, as by one-half milligramme, the course is typically apyretic, with very rare elevations of temperature during the whole disease, which may last from four to six months. Regarding the relation between the temperature curve and the anatomical changes in guinea-pigs, there are many striking contradictions, although an extensive and sudden infection is likely to produce high temperature. In other words, the range of temperature is not so dependent on the extent of the anatomical process as on the mode of action of the tuberculous poison which produces it. The study of the temperature in human pulmonary tuberculosis is surrounded with difficulties on account of the impossibility of knowing the exact condition of the alterations. Mircoli is undoubtedly right in raising the question whether what we call evident pulmonary tuberculosis is not really the later stage, the so-called predisposition, actually the stage of maturity, of the disease. In studying the temperature-curve of out-patients he found that elevation due to tuberculosis was extremely rare. In many cases with extensive anatomical lesions of the lung and many bacilli in the sputum, normal and subnormal temperatures (axillary) were found. He therefore studied the heat-regulating functions in these cases. Other writers had previously assumed that the temperature in tuberculosis follows a lower plane than in most other febrile diseases. So Volland held that fever in tuberculosis begins at 37° or, at the extreme, 37.2° C. Spengler assumed the presence of fever if the temperature was above 37.5° in the rectum or above 37° C. in the axilla. This peculiarity cannot be explained by such things as anæmia, because the author found low temperature in patients with an actual increase of the red globules.

That the low temperature is actually due to a hypothermogenic substance was demonstrated by injecting serum of a febrile tuberculous patient into other afebrile tuberculous persons. The result was that the temperature sank lower in these patients than the author had ever observed before. Mircoli studied the temperatures in the rectum and axilla, and found a greater difference than the half degree Centigrade usually considered normal. It often amounted to 1° and sometimes as much as 2° C. This difference is not constant at different times of the day in the same patient, but is usually less in the morning and greater in the afternoon. Mircoli found an inverted type of temperature very rarely in tuberculosis, and does not think there is any particular type for the latent fever. The sweating of tuberculosis has sometimes been considered a consequence of rise of temperature. Careful observation, however, proves that this is not so, and Maragliano was able to find an ethereal extract of tuberculous toxin which produced sweating without affecting the temperature. Chetrien, who studied the subjective fever of tuberculous patients, found that in some of them there was a subjective feeling of fever, although the temperature in the axilla was not elevated. To sum up, the author holds that the thermal level in tuberculosis is somewhat lower than in health—*i. e.*, from 2° to 5° C.; that the difference between the internal and external temperatures is greater, on the average 1° C.; that the sensibility to internal and external thermogenic factors is increased; that there are thermopsychic phenomena which indicate the transition from the latent to the manifest form of tuberculosis. Studies in metabolism parallel to the preceding observations are promised.

SURGERY.

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Partial Retention of Urine, Its Consequences and Treatment.—WARDEN (*Edinburgh Medical Journal*, July, 1899) points out the fact that an incompletely emptied bladder is a difficult condition to diagnose, and yet it is all important that early treatment should be instituted, which will prevent the complications which follow this condition if it remains undetected and untreated. The ensemble of symptoms is, however, so complete in these cases that when once found the diagnosis is absolute. Prostatic enlargement is the disease which produces most of the cases of partial retention, and yet it is often not until there is complete retention that the patient complains of